A.D. 1830 . . . . . N° 5931.

SPECIFICATION

OF

PAUL DESCROIZILLES.

TUBULAR APPARATUS FOR HEATING WATER AND AIR.

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Tubular Apparatus for Heating Water and Air.

DESCROIZILLES' SPECIFICATION.

TO ALL TO WHOM THESE PRESENTS SHALL COME, I, PAUL DESCROIZILLES, of Fenchurch Street, in the City of London, Chemist, send greeting.

WHEREAS His most Excellent Majesty King George the Fourth, did, by His Letters Patent under the Great Seal of Great Britain, bearing date at Westminster, the Twenty-fourth day of April, One thousand eight hundred and thirty, in the eleventh year of His reign, give and grant unto me, the said Paul Descroizilles, His special licence that I, the said Paul Descroizilles, my executors, administrators, and assigns, and such others as I, the said Paul Descroizilles, my executors, administrators, and assigns, should at any time agree with, and no others, from time to time and at all times during the term of years therein mentioned, should and lawfully might use, exercise, and vend, within England, Wales, and Town of Berwick upon Tweed, my Invention of "CERTAIN IMPROVEMENTS IN APPARATUS FOR ECONOMIZING FUEL IN HEATING WATER AND AIR, APPLICABLE TO VARIOUS PURPOSES;" in which said Letters Patent there is contained a proviso that I, the said Paul Descroizilles, shall cause a particular description of the nature of my said Invention, and in what manner the same is to be performed, to be inrolled in His Majesty's High Court of Chancery within six calendar months next and immediately after the date of the said in part recited Letters Patent, as in and by the same, reference being thereunto had, will more fully and at large appear.

NOW KNOW YE, that in compliance with the said proviso, I, the said Paul Descroizilles, do hereby declare that the nature of my said Invention, and the manner in which the same is to be performed, are particularly described and ascertained in and by the Drawing hereunto annexed, and the following description thereof (that is to say) :—

The apparatus of which a description is now to be given may be termed one possessing extensive surfaces; its essential principle consisting in this peculiarity, that the fluids to be acted upon may be kept in contact either with the exterior or interior parts thereof throughout. This principle being premised, it is obvious that the forms and dimensions of the apparatus may be varied as circumstances may require. In the Drawing Figures 1, 2, 3, and 4, represent an apparatus intended to communicate nearly instantaneously a portion of the heat contained in hot waste water produced in establishments for calico printing, dying, &c., or such as require hot or warm clean water to fresh clean cold water, in order to lessen as much as possible the consumption of time and fuel requisite to heat such clean cold water, a circumstance which has hitherto been unattended to, but which may nevertheless be very advantageous in manufacturing pursuits. Figure 1 represents a front view of an apparatus containing nearly two hundred copper pipes, of from five to six tenths of an inch in diameter, and about three feet four inches in length, and which are soldered into metal plates at their extremities in the order represented by the section, Figure 2, and at a distance apart of about half an inch from each other. These pipes are united or combined in two different receptacles by the two metal plates to which they are soldered, the one A, B, C, D, placed above, and the other E, F, G, H, below, and into which they communicate at their ends, and thus form one combination D, A, E, H, G, F, B, C, in Figure 1. The cold water is to be supplied below at the point *y* by means of the bent pipe *r*, *s*, *t*, of about two inches in diameter, and which rises parrallel to the small pipes, at or about two inches distance from them, as high as the upper receptacle A, B, C, D. An apparatus may however be formed of one, two, three, or more of these combinations, and the number, diameter, and length of the pipes may be varied as circumstances may require. Figure 3 represents an apparatus consisting of two combinations, intended to employ the waste hot water, and as the apparatus is to be supplied by a pipe of about two inches in diameter, so the orifices of the small pipes must each of them be reduced to about the hundredth part of that diameter, in order that each small pipe may receive its due supply of water. Figure 3, as above mentioned, contains two combinations viewed sideways, *d*, *a*, *e*, *h*, *g*, *f*, *v*, *c*, and *i*, *k*, *l*, *m*, *n*, *o*, *p*, *q*, with their feeding pipes *r*, *s*, *t*, and *r*, *s*, *t*. They are placed in a large chest or box I, K, L, M, which

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1 Sheet

FIG. 3.

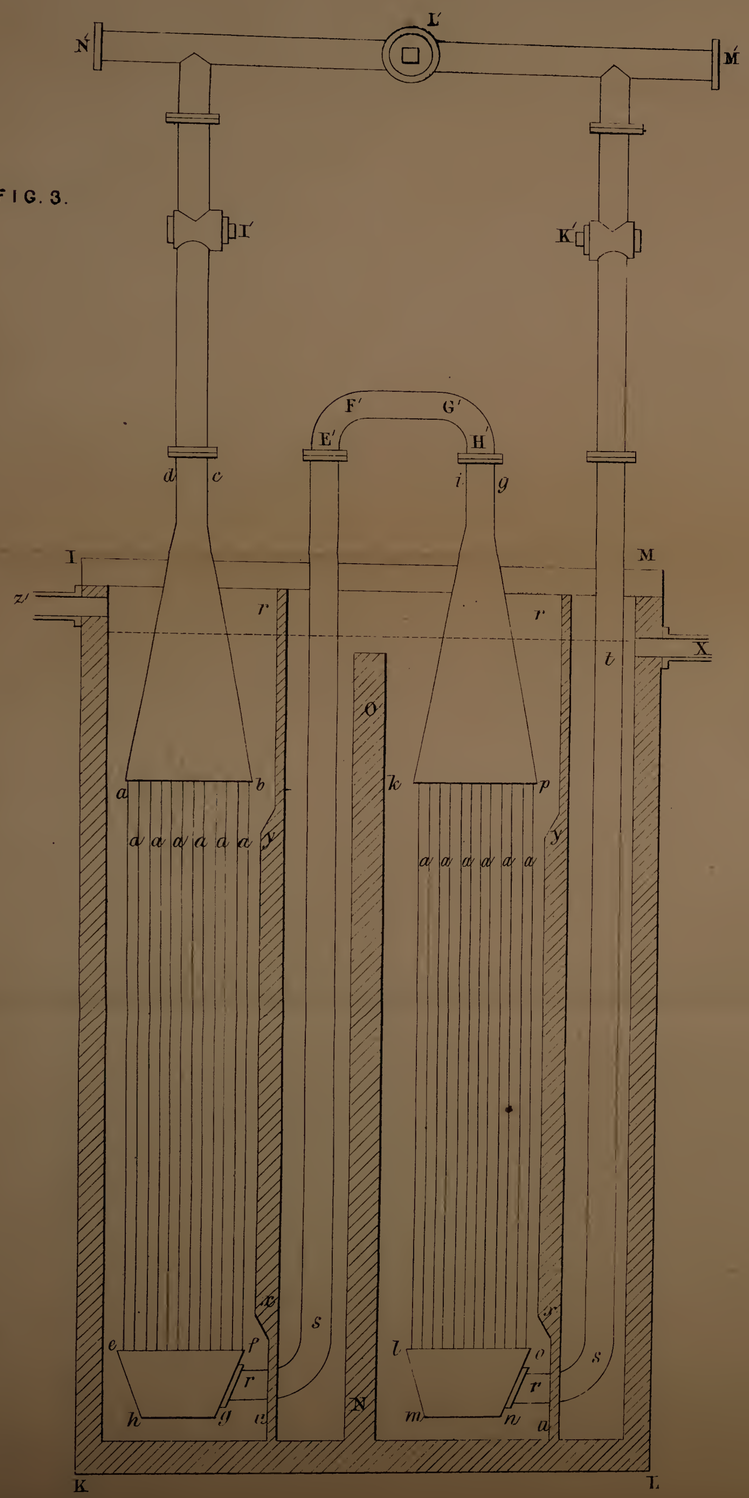


FIG. 2.

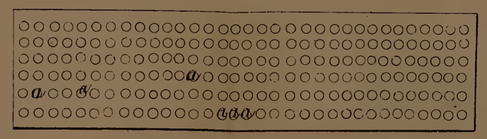


FIG. 1.

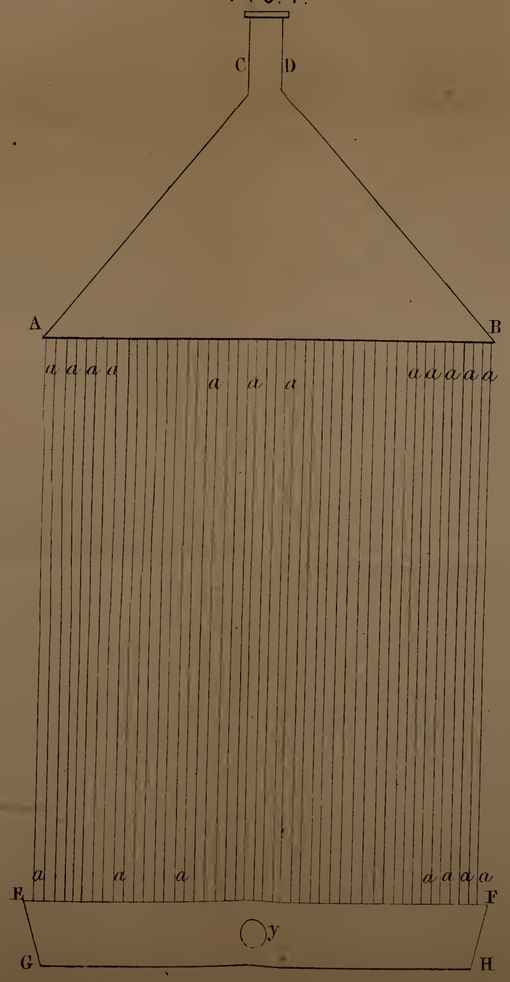
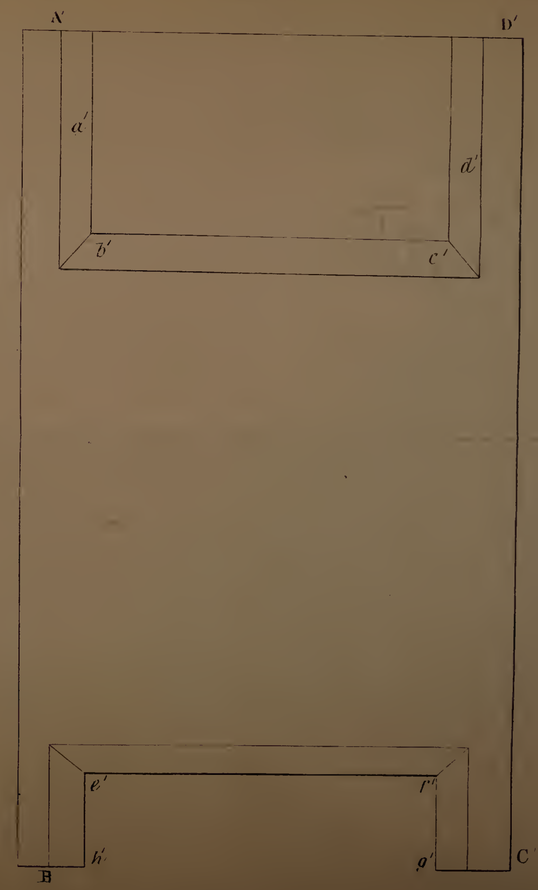


FIG 4



The enrolled drawing is colored.

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is divided into two equal parts by the separation N, O, which however does not reach quite up to the upper part of this chest or box; one of these combinations rests against the side I, K, of the chest, and the other against the separation N, O, and they are connected together by the double elbowed pipe E, F, G, H, furnished with flanches and screws; two other partitions, each two inches in thickness, and the heighth of the chest, and moveable at pleasure, are affixed by means of grooves made in the chest; these are intended to separate the two combinations from their feeding pipes. One of these two separations is represented in front in Figure 4, A, B, C, D; they are thinned away above to the thickness of about the third part of an inch at *a*, *b*, *c*, and *d*, from fourteen to fifteen inches in height, and about twenty-eight inches in breadth, and are open at the bottom at *e*, *f*, *g*, *h*, to a breadth of twenty-eight inches by eight inches in height, and they thus form two additional divisions in the chest, closed at top but open below. All being thus disposed, the apparatus must be placed in the earth deep enough to receive the warm waste water at the point *z* in Figure 3 as it escapes from the buildings. This water in passing through the chest is forced by the first partition *u*, *x*, *y*, *v*, to pass in contact with the small metal pipes *a*, *a*, *a*, &c., and then passing underneath the said partition it ascends in contact with the first feeding pipe, and passing over the top of the partition N, O, it is again forced to descend in contact with the small pipes *a*, *a*, *a*, &c., and passing underneath the other partition *u*, *x*, *y*, *v*, it again ascends in contact with the second feeding pipe of the second combination, and eventually discharges itself at the point X, lower than the point *z* at which it entered, and lower than the top of the partition N, O. If the cocks I, K, be shut, and the cock L be opened, the cold water will proceed directly to the boiler; but if, on the contrary, the cock L be shut, and the cocks I, K, be opened, the cold water is admitted by the cock K, and passes along the course indicated by the letters K^1, *t*, *s*, *r*, through the small pipes *a*, *a*, *a*, &c., and continuing its course through H, G, F, E, *t*, *s*, *r*, and through the small pipes *a*, *a*, *a*, &c. of the second combination, it thence passes between *c*, *d*, through the cock I, and escapes at the end N^1 of the cross pipe, becoming gradually warmed in its passage through the apparatus by the heat communicated by the warm waste water passing through the apparatus in the manner before described. If, instead of water, air be forced through the apparatus by any proper means, the waste hot water might be made use of to heat that air, and thus to warm such establishments as require it; for this case, however, the pipes will require to be enlarged. Any liquors requiring cooling may be passed through the pipes in the apparatus whilst a current of air is forced through the chest by any proper means, and will thus cool the liquor contained in or passing through the said pipes.

And although the chest has been above described as being enclosed in the earth, yet in certain cases, and more especially in this, it will be desirable not to enclose it. I do not mean or intend hereby to claim as my Invention any of the various parts of the apparatus herein shewn and described which may already have been known or in use; but I do hereby claim the particular combination thereof herein shewn and described, and the benefits to be derived therefrom.

In witness whereof, I, the said Paul Descroizilles, have hereunto set my hand and seal, this Eleventh day of October, in the year of our Lord One thousand eight hundred and thirty.

PAUL DESCROIZILLES. (L.S.)

AND BE IT REMEMBERED, that on the Eleventh day of October, in the year of our Lord 1830, the aforesaid Paul Descroizilles (through the interpretation of Peter Antedrozpictet, the said interpreter being first sworn that he had truly, distinctly, and audibly interpreted the contents of the above Specification to the said Paul Descroizilles,) came before our said Lord the King in His Chancery, and acknowledged the Specification aforesaid, and all and everything therein contained and specified, in form above written. And also the Specification aforesaid was stamped according to the tenor of the Statute made for that purpose.

Inrolled the Twenty-third day of October, in the year of our Lord One thousand eight hundred and thirty.

EDEN.

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